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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/803,805	03/18/2004	Aelan Mosden	FKL-005	5615
37694 7590 02/19/2009 WOOD, HERRON & EVANS, LLP (TOKYO ELECTRON) 2700 CAREW TOWER 441 VINE STREET CINCINNATI, OH 45202				
EXAMINER				
BAND, MICHAEL A				
ART UNIT		PAPER NUMBER		
1795				
NOTIFICATION DATE		DELIVERY MODE		
02/19/2009		ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

dgoodman@whcpatent.com

usptodock@whcpatent.com

Office Action Summary

Application No.

10/803,805

Applicant(s)

MOSDEN, AELAN

Examiner

MICHAEL BAND

Art Unit

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 November 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 34-50 and 52-55 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 34-50 and 52-55 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB-08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 34, 39-45, 52, and 54-55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tepman (US Patent No. 5,223,112) in view of Hasebe et al (US Patent No. 5,826,129).

With respect to claim 34, Tepman discloses a removable shutter apparatus for a deposition or etching apparatus including a shuttering mechanism disposed within a semiconductor processing chamber (abstract), with the chamber being evacuable (col. 2, lines 49-52). Tepman further discloses removing and replacing a used shutter plate with a new shutter plate without shutting down the system (abstract), where the shutter plate (i.e. maintenance item) [66] is mounted into a plating position (i.e. mounting structure) that is removable (col. 3, lines 59-68). Tepman further discloses a robotic shuttling mechanism (i.e. transfer system) [53] comprising a shutter blade (i.e. wafer transfer mechanism) [51] having a transfer arm to transfer both product substrates (i.e. wafers) and shutter plates into and out of the chamber [42], with the old shutter plate being a first maintenance item and the new shutter plate being a second maintenance item (abstract; fig. 2; col. 37-42; col. 4, lines 15-25), with fig. 2 depicting a wafer [46]

placed on a wafer holder. A chamber opening (i.e. port) must be larger than the shutter plate [66]. Fig. 3 depicts the shutter plate [66] being larger than the wafer (dotted circle). Tepman also discusses that due to the time required to remove the wafer [46"] and replace it with shutter plate [66], the pressure of the chamber is held constant (col. 4, lines 4-10), thus the processing module is not exposed to an outside environment. Despite Tepman not disclosing a controller being used, it is either inherent or obvious that since a robotic shuttling mechanism is being used to transfer wafers and shutter plates, a controller is present and programmed to control the robot. The specifics of the programming of the controller relate to intended use, with said controller capable of the claimed programming and no new structural limitations of said controller claimed. However Tepman is limited in that while the shutter is circular, it is not suggested for the shutter to be annular.

Hasebe et al teaches a substrate processing system for manufacturing semiconductors (abstract; col. 1, lines 6-10). Hasebe et al also depicts in fig. 18 a protective shutter [286] made of a ring-like (i.e. annular) band and larger than a wafer [W] underneath said shutter [286] (col. 11, lines 31-45).

Since both Tepman and Hasebe et al teach a protective shutter over a smaller wafer, it would have been obvious to one of ordinary skill in the art to interchange the ring-like shutter of Hasebe et al for the shutter of Tepman to attain the predictable result of protecting the wafer.

With respect to claims 39-45, 47-49, 52, and 54-55, modified Tepman further discloses a removable shutter apparatus for a deposition or etching apparatus including

a shuttering mechanism disposed within a semiconductor processing chamber (abstract), with fig. 2 depicting the wafer [46"] facing upward. Fig. 3 depicts the shutter plate [66] being annular, where during the replacement of the wafer, the shutter plate is moved to block the path of the plating ions, causing a build-up of material (or in the case of etching, the shutter plate would lose material) (col. 1, lines 49-57). The shutter plate [66] is lifted into plating position by a lift assembly [56] comprising four wafer-engaging fingers (i.e. pins) [57] (col. 2, lines 67-68; col. 3, lines 1-3 and 59-66). Fig. 3 also depicts two distinct arms, a shutter blade [51] for the wafers and a transfer arm [68] for moving the shutter plate [66]. Despite Tepman not disclosing a controller being used, it is either inherent or obvious that since a robotic shuttling mechanism is being used to transfer wafers and shutter plates, a controller is present and programmed to control the robot. The specifics of the programming of the controller relate to intended use, with said controller capable of the claimed programming and no new structural limitations of said controller claimed.

3. Claims 35-38 and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tepman (US Patent No. 5,223,112) and Hasebe et al (US Patent No. 5,826,129) as applied to claim 34 above, and further in view of Takahashi et al (US Patent No. 5,364,219).

With respect to claims 35 and 53, the references are cited as discussed for claim 34. Despite modified Tepman not disclosing a controller being used, it is either inherent or obvious that since a robotic shuttling mechanism is being used to transfer wafers and shutter plates, a controller is present and programmed to control the robot. The

specifics of the programming of the controller relate to intended use, with said controller capable of the claimed programming and no new structural limitations of said controller claimed. However modified Tepman is limited in that while it is disclosed to transfer the old shutter plate to a cleaning chamber or discharge bin (col. 4, lines 15-22), it is not specified how said old shutter plate is transferred to said cleaning chamber.

Takahashi et al teaches an apparatus for clean transfer associated with semiconductors (col. 1, lines 6-14) where fig. 4 depicts a maintenance chamber [14] having a processing chamber [18], another processing station [18], a clean stocker (i.e. storage assembly) [20], and (col. 3, lines 49-61). It is interpreted in fig. 4 for the top processing station [18] to be the film formation station and the bottom processing station [18] to be a maintenance station. Fig. 4 also depicts a clean box (i.e. exchange system) [28] for transporting a substrate (i.e. maintenance item) [38] between stations [18] and clean stocker [20], with figs. 5-8 depicting said clean box [28] transferring the substrate [38] between said clean box [28] and said processing (or maintenance) station [18] without breaking the vacuum (col. 5, lines 24-60). Takahashi et al cites the advantage of this exchange system as maintaining an operating environment stably clean (col. 2, lines 27-31).

It would have been obvious to one of ordinary skill in the art to use the exchange system for transferring substrates (i.e. maintenance items) to transfer the old shutter plates (i.e. maintenance) items between processing and clean chambers to gain the advantage of maintaining a stably clean environment.

With respect claims 36-38, Takahashi et al further teaches in figs. 5-8 shutters (i.e. [40], [74] and transfer ports [22], [72] acting as gate valves to for an isolation assembly. Figs. 5-8 also depict a drive mechanism [60] comprising a robot arm [56] having a first transfer arm [62] and a first finger [68] that transfer the substrate (i.e. wafer or maintenance item) between the processing station [18], maintenance station [18], and clean stocker (i.e. storage) [20]. Despite Takahashi et al not disclosing a controller being used, it is either inherent or obvious that since a robotic arm is being used to transfer substrates, a controller is present and programmed to control the robot.

4. Claims 46-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tepman (US Patent No. 5,223,112) in view of Hasebe et al (US Patent No. 5,826,129) and Yamauchi et al (US Patent No. 6,754,554).

With respect to claims 46 and 50, Tepman discloses a removable shutter apparatus for a deposition or etching apparatus including a shuttering mechanism disposed within a semiconductor processing chamber (abstract), with the chamber being evacuable (col. 2, lines 49-52). Tepman further discloses removing and replacing a used shutter plate with a new shutter plate without shutting down the system (abstract), where the shutter plate (i.e. maintenance item) [66] is mounted into a plating position (i.e. mounting structure) that is removable (col. 3, lines 59-68). Tepman further discloses a robotic shuttling mechanism (i.e. transfer system) [53] comprising a shutter blade (i.e. wafer transfer mechanism) [51] having a transfer arm to transfer both product substrates (i.e. wafers) and shutter plates into and out of the chamber [42], with the old shutter plate being a first maintenance item and the new shutter plate being a second

maintenance item (abstract; fig. 2; col. 37-42; col. 4, lines 15-25), with fig. 2 depicting a wafer [46'] placed on a wafer holder. A chamber opening (i.e. port) must be larger than the shutter plate [66]. Fig. 3 depicts the shutter plate [66] being larger than the wafer (dotted circle). Tepman also discusses that due to the time required to remove the wafer [46"] and replace it with shutter plate [66'], the pressure of the chamber is held constant (col. 4, lines 4-10), thus the processing module is not exposed to an outside environment. Despite Tepman not disclosing a controller being used, it is either inherent or obvious that since a robotic shuttling mechanism is being used to transfer wafers and shutter plates, a controller is present and programmed to control the robot. However Tepman is limited in that while the shutter is circular, it is not suggested for the shutter to be annular.

Hasebe et al teaches a substrate processing system for manufacturing semiconductors (abstract; col. 1, lines 6-10). Hasebe et al also depicts in fig. 18 a protective shutter [286] made of a ring-like (i.e. annular) band and larger than a wafer [W] underneath said shutter [286] (col. 11, lines 31-45).

Since both Tepman and Hasebe et al teach a protective shutter over a smaller wafer, it would have been obvious to one of ordinary skill in the art to interchange the ring-like shutter of Hasebe et al for the shutter of Tepman to attain the predictable result of protecting the wafer.

However Tepman is further limited in that while it is inherent for the robotic wafer transfer mechanism to be controlled via a controller, it is not specified whether the controller monitors a processing recipe to determine when to exchange the old shutter

plate (i.e. first maintenance item) for the new shutter plate (i.e. second maintenance item).

Yamauchi et al teaches a semiconductor manufacturing apparatus which has a processing chamber with a conveyance (i.e. transfer) system comprising a transfer arm for taking a semiconductor (i.e. wafer) in and out of the process chamber, where said apparatus has a control system via controller which controls the processing system and said conveyance system (abstract; col. 4, lines 65-67; col. 5, lines 1-8). Yamauchi et al further teaches that the controller follows programs (i.e. recipe), parameter data, control information, etc. for operating the processing chambers and conveyance mechanism in order to reduce system down time (i.e. improve system efficiency) (col. 1, lines 44-58).

It would have been obvious to one of ordinary skill in the art to use a controller that monitors a program (i.e. recipe) to operate the processing system and conveyance system taught in Yamauchi et al for transferring wafers and shutter plates of Tepman to gain the advantage of improving system efficiency.

With respect to claims 47-49, modified Tepman further discloses a removable shutter apparatus for a deposition or etching apparatus including a shuttering mechanism disposed within a semiconductor processing chamber (abstract), with fig. 2 depicting the wafer [46"] facing upward. Fig. 3 depicts the shutter plate [66] being annular, where during the replacement of the wafer, the shutter plate is moved to block the path of the plating ions, causing a build-up of material (or in the case of etching, the shutter plate would lose material) (col. 1, lines 49-57). The shutter plate [66] is lifted into plating position by a lift assembly [56] comprising four wafer-engaging fingers (i.e. pins)

[57] (col. 2, lines 67-68; col. 3, lines 1-3 and 59-66). Fig. 3 also depicts two distinct arms, a shutter blade [51] for the wafers and a transfer arm [68] for moving the shutter plate [66].

Response to Arguments

5. Applicant's arguments with respect to claims 34-50 and 52-55 have been considered but are moot in view of the new ground(s) of rejection due to the new claim limitations requiring an annular maintenance item.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Band whose telephone number is (571) 272-9815. The examiner can normally be reached on Mon-Fri, 8am-4pm, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on (571) 272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

8. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. B./

Examiner, Art Unit 1795

/Alexa D. Neckel/

Supervisory Patent Examiner, Art Unit 1795